




## Memo

*date:* January 30, 2014  
*to:* RSC, P. Ingrassia, and P. Sampson  
*from:* D. Beavis   
*subject:* Access to 1002A roof with beam on

It has been requested that access be allowed to the roof of 1002A for servicing the equipment on the roof.

Historically, the roofs were locked and access not permitted with beam based on the possible dose during a maximum credible incident (MCI) for the area. Recent analysis has demonstrated that the original estimates were overly conservative. The prints for the 2 O'clock shield wall were examined for potential rays through the shielding to roof of 1002. It was determined that the shield wall represent a minimum of 68 inches of light concrete in the horizontal.

The STAR shield wall was examined<sup>1</sup> for the maximum dose outside the shielding wall. The STAR wall is 5.5 feet of light concrete. Therefore the radiation dose at 2 O'clock hall at the elevation shining at the 1002A is similar to that at STAR. The Transverse distance to the 1002A roof is 60 feet verse 45 feet to the outside of the STAR wall. These numbers will be used to scale with  $1/r^2$  the STAR dose to the 1002A roof. The enhancement factor of 1.3 used for the horizontal plane in the STAR evaluation will not be used for the 1002A roof as the roof is substantially above the mid-plane. The MCI dose from STAR is 100 mrem which will scale to 50-60 mrem for the 1002A roof.

There is a small weakness in the shielding near the retaining wall to accommodate a steel structure that supports a portion of the shielding. This allows for elevated dose above 5 feet at the northeast corner of the 1002A roof. Any elevated work within 10 feet of this corner should be reviewed on a case by case basis.

There are pathways<sup>2</sup> where the radiation goes through the retaining wall and the soil and not the shielding wall. The 5.75 feet of light concrete is equivalent to about 7 feet of soil shielding. The pathways through the soil are longer so the radiation is sufficiently attenuated.

---

<sup>1</sup> D. Beavis, "Shielding Wall requirements at STAR", April 20, 2012; [http://www.cad.bnl.gov/esfd/RSC/Memos/STAR\\_wall.pdf](http://www.cad.bnl.gov/esfd/RSC/Memos/STAR_wall.pdf)

<sup>2</sup> C. Folz examined the prints and noticed these pathways.

Access to the 1002A roof will be conducted through OPM 4.100 and 4.100a. 4.100a will need to be updated.

Work on the 1002B roof should not be allowed without careful review of the work location. There are several weaknesses in the shield wall that may allow larger dose from an MCI than workers should be exposed to. These weaknesses impact the section of roof near the IR.

CC:

- A. Drees
- C. Folz
- A. Pendzick
- C. Taylor
- P. Cirnigliaro